Introduction

Hops, the female florescence of the hop plant (Humulus lupulus L.), are used in the brewing process and provide unique flavour and aroma to beer (Figure 1). Hops were grown in Ontario until the 1930's when acreage decreased due to disease problems and market pressures. Recently there has been a renewed interest in hop production predominantly for micro breweries. There are over 20 hop growers in Ontario but as a new industry, they require information to identify well adapted cultivars. A cultivar trial was planted in 2013 to address this priority. This poster presents data from the second year of the trial.

Objective

Evaluate commercial hop cultivars for: a) susceptibility to insect pests and diseases, b) yield and visual quality of cones.

Materials and Methods

• A hop yard was established at the Simcoe Research Station in May 2013
• 10 cultivars: Cascade, Hallertauer, Sterling, Northern Brewer, Zeus, Crystal, Chinook, Galena, Centennial, Bertwell (naturalized selection)
• Spacing: between row 4.5 m, in-row 1 m
• Two 5.5 m tall strings per plant, 3 bines trained per string (Figure 2)
• Plots harvested in mid-late August when cones reached 20-25% dry matter, harvested cones then dried down to 8% moisture

Results and Discussion

In 2014, potato leafhoppers, Japanese beetles and two-spotted spider mites were the most common insect pests found (Figure 3). The first potato leafhoppers were found on 4 June, but numbers remained low until late June-early July when the population increased rapidly (Figure 4a). Two-spotted spider mite eggs and nymphs were first found on 10 July but numbers remained low throughout the season and there were no differences in TSSM counts amongst the cultivars.

Japanese beetle feeding damage was least severe on Chinook, followed by Bertwell and Cascade (Figure 4b). The number of potato leafhoppers per leaf was lowest on Bertwell and Galena and severity of hopperburn was lowest in Bertwell, Galena and Centennial (Figure 4 c,d). Overall, aroma cultivars tended to be more attractive to leafhoppers and exhibited more severe symptoms of feeding damage.

Downy mildew was observed in late May to early June, but disease was sporadic and no differences were observed amongst the cultivars. Cascade, Zeus, Galena and Chinoik produced the highest yields in 2014. However, cone quality was poor due to widespread Alternaria cone disorder (Figure 3 c). All cultivars were affected, however severity was lowest on the cultivars Cascade and Bertwell (Figure 6).

Conclusions

• Potato leafhoppers, Japanese beetles, and Alternaria cone disorder were the most significant production challenges in 2014
• There were significant differences in insect and disease susceptibility amongst cultivars
• Chinook had the lowest levels of Japanese beetle feeding damage
• Potato leafhopper counts were lowest on Bertwell and Galena
• Severity of Alternaria cone disorder was lowest on Cascade and Bertwell
• Cascade, Zeus, Galena and Chinoik produced the highest yields in 2014

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